

## CATALYZING CLEAN ENERGY IN BANGLADESH PROGRAM ANNUAL PERFORMANCE REPORT

October 9, 2012 - September 30, 2013

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OCTOBER 9, 2012 - SEPTEMBER 30, 2013

CATALYZING CLEAN ENERGY IN BANGLADESH (CCEB)
CONTRACT NUMBER: AID-388-C-13-00001
DELOITTE CONSULTING LLP
USAID/BANGLADESH ECONOMIC GROWTH OFFICE
FEBRUARY 3, 2014

#### **DISCLAIMER:**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

#### **ACRONYMS**

The following table provides a list and description of acronyms used in this report.

**Table 1: List of Acronyms and Definitions** 

Acronym	Definition
ADB	Asian Development Bank
AEE	Association of Energy Engineers
AOR	USAID Agreement Officers Representative
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BEO	USAID Bureau Environmental Officer
BCSIR	Bangladesh Council of Scientific and Industrial Research
BERC	Bangladesh Energy Regulatory Commission
BIDS	Bangladesh Institute of Development Studies
BPDB	Bangladesh Power Development Board
BSTI	Bangladesh Standards and Testing Institution
BUET	Bangladesh University of Engineering and Technology
CCEB	Catalyzing Clean Energy in Bangladesh
CDM	Clean Development Mechanism
DESCO	Dhaka Electric Supply Company
DPDC	Dhaka Power Distribution Company
DOE	Department of Energy
DSM	Demand Side Management
EC-LEDS	Enhancing Development for Low Emissions Development Strategies
EE	Energy Efficiency
EMMP	Environmental Mitigation and Monitoring Plan
EPA	Environmental Protection Agency
EU	European Union
Fhi360	Fhi360 Organization
GACC	Global Alliance for Clean Cookstoves
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit GmbH
	(Germany)
GJ	Gigajoules
GOB	Government of Bangladesh
GTCL	Gas Transmission Company Limited
ICEA	USAID Improved Capacity for Energy Access Project
ICF	ICF Corporation
ICS	Improved Cookstoves
IDCOL	Infrastructure Development Company
IDLC	Industrial Development Leasing Company
IIDFC	Industrial and Infrastructure Development Finance Company
IFC	International Finance Corporation
IFIC	International Finance Investment and Commerce Bank
JICA	Japan International Cooperation Agency
LEAD	Low Emissions Asian Development

LEDS Low Emission Development Strategy

LOC Letter of Cooperation

MFI Microfinance Financial Institution

MOE Ministry of Education

MOPEMR Ministry of Power, Energy and Mineral Resources
NARUC National Association of Regulatory Utility Commissions

NGO Non-Governmental Organization
PURC Public Utility Regulatory Commission

SME Small and Medium Enterprise
SMC Social Marketing Corporation

SNV SNV Development Organization (Netherlands)

SOW Scope of Work

STTA Short Term Technical Assistance

SREDA Sustainable and Renewable Energy Development Authority

TA Technical Assistance
TBP Textile Best Practices

TGTDCL Titas Gas Transmission and Distribution Company Ltd.

TQS Technical Quality Standards

TV Television

UNFCCC United Nations Framework on Convention Climate Change
USAID United States Agency for International Development
USEPA United States Environmental Protection Agency

WBG World Bank Group Winrock Winrock International

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#### **Executive Summary**

Contract number AID-388-C-13-00001 between the U.S. Agency for International Development (USAID) and Deloitte Consulting LLP became effective on October 10, 2012, with concurrence to begin mobilization on November 4, 2012. The period of performance for this contract is the five-year period from the effective date of the award through October 9, 2017. This annual report covers the first year of implementation, October 9, 2012 through September 30, 2013, per Section F.3 of the Contract.

The Deloitte team has completed mobilization, first year staffing, substantially completed the work plan deliverables for the first year, and met the Performance Monitoring and Evaluation Plan (PMEP) Year 1 targets. In summary:

<u>Mobilization</u>: The Deloitte team completed mobilization of the Catalyzing Clean Energy in Bangladesh (CCEB) team via assignment/relocation of the Chief of Party, recruitment and assignment of technical and support staff, issuing technical/support subcontracts, obtaining office space, and establishing the CCEB project within the energy community in Bangladesh.

<u>Task 1: Improved Regulatory Environment</u> – CCEB completed and presented the Maturity model (current and future state) for the Bangladesh Energy Regulatory Commission (BERC) and achieved a consensus with BERC on its future capability goals; completed the case docketing and management information system conceptual design; and, initiated technical assistance to support strengthening BERC's legal capacity.

<u>Task 2: Energy Policy</u> – CCEB completed the greenhouse gas inventory (baseline assessment report and Greenhouse Gas (GHG) database); held several workshops to define the inventory and institutionalize it within the Power Division, completed the GHG model; held similar workshops; and, issued completion reports for USAID and the Power Division.

<u>Task 3: Industrial Energy Efficiency</u> — CCEB conducted walk through energy audits at 20 textile industrial facilities, and investment grade audits at eight of the 20 facilities. Fifty-six energy engineers completed the AEE Certified Energy Auditor course. CCEB conducted a best practices workshop for the textile industry. Lastly, the team developed and approved the incentive fund grants manual and engaged financial institutions in Bangladesh to explore industrial energy project financing.

<u>Task 4: Utility DSM – CCEB</u> initiated a number of activities with the two Dhaka distribution utilities, the Dhaka Power Distribution Company (DPDC) and the Dhaka Electrical Supply Company (DESCO). These included: drafting selection criteria and selecting one distribution network within each utility service area for load surveys; carrying out quantitative load surveys; identifying initial representative measures for Demand Side Management (DSM) and energy efficiency (EE); issuing a load research report for each utility; working with each utility to establish a DSM cell; and issuing an overall DSM assessment report.

Task 5: Improved Cookstoves – CCEB concentrated activities on:

- donor coordination (contacts and mutually supportive relationships were established with donors);
- support to manufacturers' and distributors of Improved Cookstoves (ICS);
- education and outreach;
- assessment of optimal distribution channels and financing options;
- assessment of testing and standards and protocols; and,
- a forum on Trade Facilitation was conducted in Dhaka.

CCEB issued a final report of activities to USAID.

Members of the Deloitte team completed SSTA assignments for all tasks throughout the first year.

<u>Training:</u> Fifty-six participants received training through the AEE Certified Energy Auditor course. One BERC staff member took part in the PURC/World Bank Group International Training Program on Utility Regulation and Strategy.

<u>Workshops:</u> The Task 1 maturity Model, Task 2 GHG database and Modeling, Task 3 Best Practices Workshop in the Textile Industry, and Task 5 ICS Trade Facilitation Platform all organized workshops.

PMEP: CCEB developed and approved the PMEP.

<u>Gender and EMMP:</u> CCEB carried out Gender and Environmental Monitoring and Mitigation Plan (EMMP) activities.

<u>CCEB Web Page</u> – CCEB designed and implemented the CCEB web page, which the team updates regularly with current announcements, postings, and deliverables.

<u>Expenditure forecast:</u> The forecast is on target: 18% of contract TA budget had been spent by September 2013.

At the end of the first year, the Deloitte team is pleased to report that all main Year 1 deliverables, with the exception of Subtask 4.2, have been completed and all five core task areas and support tasks are well established and prepared to move forward with the Year 2 Work Plan. Task 4 deliverables are pending acceptance by USAID.

The plans for next year will concentrate on continuing with Year 1 activities in accordance with the Year 2 Work Plan.

#### Project Discussion – Progress under each task/sub-task

The purpose of the CCEB project is to support energy sector development for energy security, economic growth, and climate change mitigation. Over the next five years, CCEB will enhance the enabling environment, build capacity to design and implement supportive policies and regulations, and increase utilization of clean energy technologies for the energy sector to develop on a low-carbon trajectory. It will achieve these goals through a focus on reforming the energy enabling environment; promoting private sector investments in clean and renewable energy; building local capacity in EE and DSM; and implementing a comprehensive clean cookstoves initiative in rural and energy-deficient parts of the country.

### Component A: Improve Enabling Environment for Low Emissions Development

#### Task 1: Improve Regulatory Environment for Clean Energy Development

In accordance with the approved Year 1 Work Plan, CCEB will both build BERC's institutional capacity, using steps as agreed by BERC in a Maturity Model, and build BERC's capacity for action. The CCEB Work Plan builds on previous USAID-funded efforts that supported BERC, especially those of the National Association of Regulatory Utility Commissions (NARUC) and USAID Improved Capacity for Energy Access Project (ICEA). It closely coordinates with the concurrent World Bank Group (WBG) project support to BERC and with other USAID projects working on related tasks. The results of these year 1 activities will create the momentum for the implementation of subsequent Task 1 activities and achieve effective regulation, which will support the implementation of all other CCEB activities.

#### Year 1 Work Plan

#### **Year 1 Accomplishments**

#### 1.1 Building and Implementing BERC Maturity Model

CCEB agreed, according to the Year 1 Work Plan, to collaborate with BERC on performing an overall assessment of BERC's capacity and BERC's goals and to identify specific actions to reach those goals (the BERC Maturity Model). This achieved the following (1) supported BERC's goal to develop an optimum case docketing and data management system and (2) identified needs to strengthen BERC's legal capacity to carry out its functions, as mandated by the BERC Act. The Maturity Model includes specific goals related to subtasks 1.2 and 1.3.

CCEB initiated this task with a series of meetings with BERC staff to explain the process to develop a maturity model. Subsequent meetings and one-on-one discussions continued with a focus on understanding the baseline of BERC's current capabilities and achieving a consensus on BERC's future capability goals. CCEB also reviewed past trainings to assess BERC Staff capacity development needs. These discussions also aimed to build a consensus among BERC staff to develop the Maturity Model. After presenting to BERC, CCEB obtained valuable feedback for the final report. The final Year 1, Task 1 Report was completed and submitted to USAID.

#### 1.2 Initiating Reinforcement of BERC'S Case Docketing and Data Management System

CCEB will support the development of BERC's vision for an optimal case docketing and data management system. The current system will be baselined by CCEB, which will develop the terms of reference (TOR) for the system that best fits BERC's needs. The TOR will provide input for both hardware and software requirements to implement BERC's agreed to optimal system (identified in the Maturity Model). CCEB will closely coordinate this effort with the concurrent WBG support to BERC.

Based on a typical regulatory body's system needs, CCEB and BERC agreed to a draft computer hardware and software development outline. BERC subsequently requested support to implement the docketing for its ongoing licensing function. CCEB concluded that there should be one IT person to outline the hardware and software conceptual development. CCEB issued a subcontract to a local IT consultant and completed a report on the conceptual design of a case docketing and management system for BERC. The report and recommendations are included in the Year 1 Final Report.

#### 1.3 Strengthening BERC's Legal Capacity

As part of developing the Maturity Model, CCEB's legal specialist will work with BERC to carry out a number of activities. These include: (a) analyzing how a civil court operates, and how BERC operates currently, as required by the BERC Law; (b) discussing the requirements to systematically address and develop necessary procedures, rules, and other materials for transitioning BERC to the standards of a civil court; and (c) developing a detailed plan of how to jointly carry out the necessary procedures, rules, and related tasks.

The CCEB regulatory expert confirmed that the BERC Act conveys to BERC the rights to act as a civil court would act in handling disputes. However, in order to carry out this mandate, CCEB concluded that BERC's legal capability needs strengthening. The CCEB Task 1 leader carried out in depth discussions with key BERC staff on the required next steps. BERC agreed to conduct dispute resolution and that its legal capability needed strengthening beyond the separate ongoing activity of formulating appropriate regulations. BERC requested support to review its draft regulation for best practices. CCEB concluded that one legal person is required for this review. The TOR for a legal specialist was been prepared and the engagement is underway.

#### 1.4 Other

CCEB will arrange for the enrollment of one BERC staff member in the Winter 2014 PURC World Bank Group International Training on Utility Regulation and Strategy program.

CCEB enrolled two BERC staff members in the summer 2013 WB/PURC program. Only one of the two staff members completed the WBG/PURC training, as the other could not attend due to visa difficulties.

#### Task 2: Strengthen Analytical Capacity for Energy Planning and Policy Making

One of the fundamental building blocks of any Low Emission Development Strategy (LEDS) process is the capacity to model scenarios and analyze data, and then compare and contrast various development options. The resulting development option should reduce emissions without significantly restraining economic development.

There are opportunities to lower emissions associated with energy sector development. Identifying favorable options for energy sector development will require a greatly enhanced capacity to collect, model, and analyze information associated with the financial, economic, environmental, and social impacts of development. CCEB will leverage the Deloitte team's globally established low carbon capabilities, including Deloitte's EU Carbon Footprint Project, and ICF Corporation's (ICF) work on such projects as the USEPA's International GHG Inventory Capacity Building Project, and USAID's Low Emissions Asian Development (LEAD) program.

#### Year 1 Work Plan

#### **Year 1 Accomplishments**

#### 2.1 GHG Emissions Data and Analysis

According to the Year 1 Work Plan, activities under this task allow CCEB to enhance the Government of Bangladesh's (GOB) stakeholders' Bangladeshi technical and institutional capacity for GHG data collection and data analyses. This aims to improve their understanding of emission sources emission reduction opportunities associated with energy sector development. CCEB's support for energy sector development strives to ensure that future energy and climate change plans and policies can be more oriented towards reduced GHG emissions (i.e., the Bangladesh Climate Change Strategy and Action Plan or BCCSAP, national energy policy, and the energy component of the five-year plans).

ICF, as part of the Deloitte team, mobilized a technical expert to the field for 115 days to initiate the activities under this task. The expert conducted extensive document review and in-country interviews to identify power sector GHG emitters and related GOB stakeholders. This work resulted in a detailed spreadsheet of Bangladesh's power their generating capacities, ownership/operational structure, and fuel types, sources, and volumes (for a typical day). In addition, the expert issued a draft, baseline assessment report on data availability, sources, and gaps. These efforts were coordinated with the US EPA's projects addressing GHG Inventory Capacity Building for Sustainable Inventory Management Systems in Southeast Asia and Bangladesh, and USAID's LEAD program. CCEB provided a draft GHG assessment report for review, followed by two Short Term Technical Assistance (STTA) trips to continue discussions regarding GHG emissions data and analysis. CCEB also held a roundtable on July 29 that included key stakeholders from GOB, including the Power Division, Power Cell, the Bangladesh Power Development Board (BPDB), Gas Transmission Company Limited (GTCL), Petrobangla, and BERC. In addition, the team held several other meetings with key stakeholders including BERC, Power Cell, Sustainable and Renewable the Energy Development Authority (SREDA), and BPDB.

#### 2.2 Energy Policy Analysis

The Year 1 Work Plan activities, under this task, enhance GOB and Bangladeshi stakeholder policy analysis and planning capacity for energy sector and low emission development.

These activities directly support USAID and the U.S. government's commitment initiative on Enhancing Capacity for Low Emission

To augment the Task 2 team's understanding of load growth projections, fuel mixes, energy demand, and fuel and energy product prices, CCEB performed an in-depth study of key documents. These included the Bangladesh Second National Communication, the 2010 Power System Master Plan, Petrobangla and Power Development Board annual reports, daily gas production and electricity

Development Strategies (EC-LEDS) Bangladesh. generation reports, policy documents on private sector power development, and the operation and ownership of small power plants and captive power producers. Supplementing this study were interviews with strategic personnel from Titas Gas Transmission and Distribution Company, Power Division, Power Cell, and the Department of the Environment. CCEB utilized this process to identify players in the collection important dissemination of energy sector data, mapped Bangladesh's power sector, and laid groundwork was for developing an optimal process and next steps for data acquisition.

CCEB continued development of a prototype for the power sector screening tool, using the data repository created under Task 2.1 and additional data gathered from stakeholders through prior meetings and interactions. CCEB also continued evaluation of third-party capacity expansion models to develop recommendations for BPDB on options for enhancing their modeling capabilities.

The Task 2 Team leader held meetings with various stakeholders. The task leader held detailed power sector modeling discussions with the Power Development Board, Power Division, and Power Cell; discussed economic modeling with the Bangladesh Institute of Development Studies (BIDS); and, discussed the upstream fuel sector with Petrobangla. Furthermore, the task leader met with SREDA on renewable energy and EE potential; discussed Bangladesh's climate change concerns and options with the Department of Environment; talked to BERC about issues related to power tariff setting processes; and, lastly, met with the Centre for Policy Dialogue (CPD) and the Dhaka Chamber of Commerce. CCEB gathered valuable information and data through these discussions, which helped form the modeling recommendations. In two additional STTA trips, CCEB continued its collaboration with various stakeholders. CCEB held a second roundtable discussion to discuss modeling questions and the CCEB's initial recommendations on potential modeling enhancements—the roundtable findings were used to finalize the Year 1 deliverables for this task. CCEB finalized all Year 1 deliverables, including the prototype screening tool, version 1.0 and the Year 1 Report.

#### Component B: Increased Energy Efficiency and Conservation

The gap between electricity supply and demand continues to increase in Bangladesh. Meeting the rising energy demand solely through increases in supply, and thus without DSM, is an expensive and infeasible solution. The efficient use of energy is therefore crucial to addressing the twin challenges of energy security and GHG emissions mitigation.

Recent studies by WBG and the German development agency, Deutsche Gesellschaft fur Internationale Zusammenarbeit GmbH (GIZ), have shown that significant, commercially viable opportunities exist for EE in Bangladesh, for which capital has not previously been available. Major barriers to these opportunities include the lack of access to financing (as commercial banks are not prepared to lend for EE), a lack of incentives for investment by end users, resulting from non-cost reflective electricity pricing, and a lack of information and awareness about EE technologies and the associated costs and benefits.

#### Task 3: Industrial Energy Efficiency Analysis and Adoption

There are opportunities to improve industrial EE in various sectors in Bangladesh. Assessments and implementation of cost-effective efficiency improvement, especially in energy-intensive industries, can lead to lower emissions and cost-effective savings. There is potential for the adoption and use of proven and innovative technologies.

EE opportunities are most apparent in medium-sized industries, where firms can use improved motors, pumps, and boilers, co-generate electricity, and improve industrial systems and processes. The returns on investment for these activities are favorable even under current electricity and natural gas pricing schemes. These activities can support long-term sustainability, through strengthening private and public sector capacity to develop EE projects, financing, and implementation, and through training of energy auditors, energy entrepreneurs and financial institutions.

#### Year 1 Work Plan

#### **Year 1 Accomplishments**

#### 3.1 Project Identification and Development

The Year 1 Work Plan specified that CCEB, in consultation with ICF and following recommendations of the "Industrial Energy Efficiency Opportunities Assessment Bangladesh" Report, focus on EE project identification and development in Bangladesh's largest sector, the textile industry (verified by ICF). The report indicates that the payback period for textile industry EE Projects is less than two years—making project financing feasible. As noted in the Year 1 Work Plan, this activity focused on privately owned small and medium sized enterprises (SMEs), particularly those that are export-oriented. To increase the awareness of textile stakeholders, CCEB will organize a workshop in Dhaka to announce the industrial EE program and potential grant funding. Project selection will include gender criteria that gives women-owned businesses preferred status, all

After reviewing USAID's "Industrial Energy Efficiency Opportunities Assessment Bangladesh" Report and holding discussions, CCEB decided that its EE projects focus on only the textile sector in the first year. The Report had identified four priority industrial sectors. **CCEB** contacted relevant trade associations, business forums and the textile plant community to request a dialogue with them about the CCEB project, and proposed the criteria for selecting ten textile plants to receive walk through energy audits. CCEB coordinated these efforts with donor agencies and financial institutions, including GIZ, JICA, ADB, IFC, the Industrial and Infrastructure Development Finance Company (IIDFC), and the Industrial Development Leasing Company (IDLC) Finance Limited. In addition, CCEB prepared a scope of work and a solicitation for local energy auditing other project evaluation criteria being equal. There are 201 textile SMEs that approximately over 1 billion cubic meters of gas in 2012. On average, less than 60 percent of these SMEs have implemented EE Technical Best Practices (TBP)—indicating the great potential for EE Projects in this sector. CCEB will coordinate with other development agencies, namely the Japan International Cooperation Agency (JICA), the International Finance Corporation (IFC) and the Asian Development Bank (ADB), to avoid duplication and coordinate with their programs on cleaner production and EE.

services, and awarded two local firms to begin walk through energy audits in early July.

CCEB and its local subcontractors completed 20 walk through energy audits at selected textile factories, and followed up with eight investment grade audits. The resulting reports were prepared and submitted to the factories and USAID as a part of the Year 1 deliverables. CCEB held a wrap-up workshop on the best practices of industrial EE in the textile sector in September, gathering approximately 60 attendees from the sector. CCEB issued workshop takeaways. The ICF EE consultant made a two-week STTA to assist in completing the audit reports.

#### 3.2 Financing Facilitation

Project interventions in this part of the Year 1 Work Plan aimed to catalyze financial investments in industrial EE through a combination of financial institution awareness raising, financing facilitation and incentives, and business advisory services/technical assistance. This activity assisted private sector companies to bring commercially viable EE projects to financial closure and support project sustainability.

CCEB and IFC discussed how to collaborate on building capacity within Bangladesh's financial sector to effectively assess and support EE financing in industry. CCEB surveyed potential participating financial institutions, and met with IIDFC and IDLC Finance Limited. The financial institutions expressed great interest in working with CCEB and exploring the possibility of providing loans to textile plants for implementing the EEs identified by CCEB. CCEB carried out investment grade audits, which researched local financing options. The ICF EE expert also held consultations on financing alternatives. The Year 1 Task 3 Report discusses financing options.

#### 3.3 Pilot Projects and Project Incentive Funds (Grants)

CCEB intends to employ grant funds facilitate pilot EE interventions, as needed, by private sector companies. Grants would leverage private sector investment and take the form of engineering services or equipment procurement. CCEB envisions for these incentives to encourage early adopters of EE technologies and practices, without distorting the broader market. Incentives would target projects that are inherently commercially viable, replicable and have the potential to scale up following a successful demonstration project. The objective, however, is to first implement EE Projects that do not need grant assistance. CCEB will seek USAID's involvement and approval for potential grants.

CCEB prepared and approved a grant manual, a grant application form, instructions on how to apply for a grant, and details on the grant award mechanism. Draft selection criteria is currently under review.

#### 3.4 Capacity Building for Energy Sector Professionals

CCEB agreed to support the establishment of a pool certified individuals from the private

CCEB met with relevant stakeholders (the Power Division, SREDA, and academia) on the

sector that will be capable of providing energy services, such as energy auditing and energy consultant services, for enterprises interested in sustainable EE projects. CCEB envisioned that these energy service providers would eventually assume some of the contractor functions in EE project identification, development, and financing facilitation. CCEB engaged the Association of Energy Engineers (AEE) to conduct an Energy Auditor Certification program and plans to prepare lists of accredited energy auditors and energy managers for publication on CCEB's outreach platform, along with information on certification requirements. CCEB believes that a workshop on best practices in industrial EE for the textile industry would support knowledge sharing and spark interest among facilities that did not yet receive CCEB sponsored audits.

implementation options for energy auditing training. CCEB decided that AEE carry out the accreditation of energy auditors, a train-the-trainers program, and to promote establishing an AEE Chapter in Bangladesh.

CCEB awarded a subcontract to AEE to conduct two Certified Energy Auditor programs and one train-the-trainer program in Bangladesh. AEE conducted two Certified Energy Auditor courses in August, with 56 local energy sector professionals completing the course and taking the final exam. Out of 56, 43 passed the exam received a certification. Eight participants then took a train-the-trainer course, so that they can offer similar courses locally in the future. The Year 3, Task 3 Final Report provides an overview of the training.

#### Task 4: Demand Side Management Programs for Electric Utilities

DSM is a means to reducing peak electricity demand, especially when there is a lack of supply to meet peak demand. However, because of de-rated generation capacity and an unpredictable load pattern, DSM can be used during off-peak hours. By reducing the overall load on an electricity network, DSM can achieve the following: mitigate electrical system emergencies, reduce the number of blackouts, and increase system reliability. It can also reduce the dependency on expensive fuel imports, reduce energy prices, and reduce emissions that are harmful to the environment. As DSM has evolved in Bangladesh, BPDB and major urban electricity distribution companies have implemented a number of DSM activities, such as the mandatory closing of shops at 8 pm, and stopping steel re-rolling mills during peak evening power demand. The agencies implemented these activities *ad hoc*, rather than by using economic assessments—and thus their effectiveness is uncertain.

Led by the team leader, HB Consulting, and with ICF support, CCEB will provide the tools and technical assistance to develop quantitative load studies/DSM data, thereby facilitating market-based DSM solutions for Bangladesh distribution utilities. CCEB will perform an institutional gap analysis to identify potential adjustments to the institutional framework of Bangladesh utilities. This may likely result in the recommendation to establish specific DSM units within each utility that are responsible for DSM activities (a DSM Cell). CCEB will also work with the utilities in DSM project identification and budgetary requirements for DSM Projects, as described in interventions two and three below. CCEB has already established relationships at both Dhaka distribution companies, DPDC and DESCO, regarding a high-level technical contact point to develop a DSM Project and explore smart grid adoption options, per USAID's requirement.

#### Year 1 Work Plan

#### **Year 1 Accomplishments**

#### 4.1 Smart Grid

CCEB will assess the utilities' ability to adopt smart grid capabilities and provide technical support to implement smart grid capability on a pilot basis (e.g., smart meters, demand response, and improved grid management systems). Deliverables under this intervention will be specific assessments of various smart grid or related technical grid improvements, as agreed by CCEB, USAID and the utility that merits scoping a potential pilot project. CCEB aimed to identify and complete scoping/costing for at least two pilot smart grid related projects for one of the urban utilities in the first year.

CCEB did not plan activities for this sub-task in Year 1.

#### 4.2 DSM Program Analysis and Design

**CCEB** began working with two urban distribution utilities to implement DSM programs. CCEB is aware that BERC drafted DSM regulations related to the electric distribution companies, in the Technical Quality Standards: Performance Indices for Electricity Distribution Utilities (TQS). BERC informed CCEB that the DSM information in the TQS document is for reporting purposes, with a requirement for utilities to reduce system losses and regularly monitor their distribution system. CCEB will support BERC in establishing other regulations for utilities regarding DSM policy, as it relates to interventions two and three. With the mandate to establish DSM Projects with Bangladesh distribution utilities, CCEB will continue dialogue and active load research with DESCO and DPDC to identify cost-effective DSM initiatives and appropriate smart-grid applications. This DSM sequence could also occur in the reverse, if the utilities formulate new DSM ideas that require BERC to provide incentives to drive their implementation.

Meetings with DPDC and DESCO aimed to enhance awareness for formulating a DSM project for the Bangladesh electric utilities. **CCEB** held subsequent meetings with participating utilities, to gather data and information with the support of utility technical staff and to nominate a single-point-of-contact person. CCEB developed a selection criteria document, and selected a network from each utility to receive a quantitative load study. In addition, CCEB issued a local subcontract for the quantitative load study with the final selection of one electric feeder from DPDC and one from DESCO, in cooperation with DPDC and DESCO.

After both utilities had designed their respective DSM Cell structures and designated functions, they issued executive orders to establish the DSM cells formally. The DSM cells will promote DSM measures with the utility customer base.

Deliverables under this task included the selection criteria and results, network analysis, and a DSM summary report. USAID had not yet accepted these deliverables as of this report's date.

#### **4.3 DSM Program Implementation**

CCEB intends to provide technical support to utilities for implementing DSM Programs, yet no DSM programs will to be ready for implementation in the first year of the program.

CCEB did not plan activities for this sub-task in Year 1.

#### **4.4 Tariff Regimes**

The results of CCEB's load research will assess

CCEB, with the assistance of the ICF consultant,

the contributions of various customer classes to system peak demand and analyze the relative impact of various tariff options. Due to the time required to carry out a quantitative load study and analysis on a specific grid sub-system, this effort with each utility will follow the load studies planned in Task 4.2.

carried out initial research and identification of innovative tariff mechanisms. The Year 1 DSM Program Report includes findings and recommendations from this analysis.

#### Task 5: Market Analysis and Development for Improved Cookstoves

Under Task 5, CCEB will implement a set of activities to build a sustainable ICS market in Bangladesh by reducing energy consumption and greenhouse pollutants. CCEB aims to expand the market for improved biomass cookstoves by developing sources of finance for consumers and/or clean energy businesses currently producing improved biomass cookstoves. These efforts would strengthen businesses involved in the cookstove supply chain and better understand consumer preferences in order to generate additional market demand. CCEB will coordinate with GOB, the Global Alliance for Clean Cookstoves (GACC), donors, the private sector, and civil society to establish a thriving market for clean cooking solutions — on both the supply and demand sides. CCEB will also look to engage with local partners who can assist with outreach to rural sector entrepreneurs, who understand local conditions and can support implementation of the task activities.

#### Year 1 Work Plan

#### **Year 1 Accomplishments**

#### **5.1 Market Development**

CCEB agreed to begin a comprehensive market development effort based on consumer needs and preferences, willingness to pay, and barriers to purchasing and properly using ICS. The market development effort intends to include focus groups and pilot projects for testing a range of stove models, pricing points, and/or marketing strategies that are likely to reach scale in Bangladesh. The effort would look at current campaigns led by ICS actors to inform consumer education and market development approaches, including TV, radio advertisements, and/or community outreach events. Market development activities targeting females would be coordinated with health experts from USAID programs, donor partners and GOB, as well as informed by regional expertise to incorporate knowledge in behavior change and social marketing.

CCEB began this task by reviewing the country plan for Bangladesh and coordinating with GACC, GoB, the donor community and other relevant stakeholders. CCEB continued its coordination meetings with Non-Governmental Organizations (NGOs) to become familiar with related activities this area and explore collaboration opportunities with NGOs. CCEB and local NGOs discussed the major constraints and challenges for scaling up the cookstove program. GACC, a United Nations initiative, organized the Global Improved Cookstove conference in Cambodia, which CCEB attended. The CCEB ICS team took this opportunity to meet with distributors and manufacturers and carbon requirement specialists, including: Nexus Carbon for Development, ImpactCarbon, CQuestCapita, and MicroEnergy Credit. CCEB discussed Bangladesh's ICS capabilities and the opportunities for these organizations to enter the Bangladesh ICS market. Global manufacturers have as a result planned future visits to Bangladesh to understand how to harness and increase demand for ICS in rural areas.

CCEB conducted ICS sector visits to Rajshahi and Sylhet to meet with ICS consumers and

entrepreneurs. The study of these two areas showed that the potential for high demand in ICS technologies; CCEB assessed that there was significant demand among middle to high-income families. The identified target market and demographic zones include high-income areas (villages and semi-urban areas) near Rajshahi, Chapainawabganz, Srimangal, and Bibiyana. Most of the potential consumers, entrepreneurs, NGOs, Microfinance Financial Institutions (MFIs) and government officials were unaware of the new technologies proposed by CCEB. There is therefore a need for increased marketing and awareness-raising campaigns. CCEB identified a number of potential partner entrepreneurs and MFIs that are able to support both consumers and entrepreneurs in the distribution and development of ICS products over the next five years.

The Task 5 Final Report outlines findings from CCEB's comprehensive market development.

#### 5.2 Enterprise Development and Access to Financing

CCEB planned to provide capacity building training and mentoring to enterprises in order to: develop business plans; employ targeted and effective marketing strategies; conduct internal quality control; and, comply with carbon finance requirements. CCEB would begin by assessing the current state of enterprise development, access to financing, and quality standards, with the aim of supporting enterprises to expand of their production and Through distribution capacities. coordination effort detailed in 5.5, CCEB will help set up a knowledge sharing platform with the Ministry of Power, Energy and Mineral Resources (MOPEMR), to share findings with local ICS stakeholders. Using these results, CCEB intends to screen and select 20 established ICS manufacturers (30% women) from different regions of Bangladesh. CCEB would provide these manufacturers with training to draft basic business models in collaboration with other ongoing campaigns (GOB, NGOs, donors, etc.) In forthcoming years of the project, CCEB may use these business models to train practitioners at local vocational institutes. In parallel to this activity, CCEB will establish linkages between entrepreneurs and financial institutions on providing access to finance for entrepreneurs, also in collaboration with other ongoing

CCEB has met with GIZ, WBG, and the Dutch development organization (SNV), to understand their activities in enterprise development and access to financing, and identify potential areas of collaboration. CCEB also met with financial institutions such as the International Finance Investment and Commerce Bank (IFIC) and Krishi Bank. CCEB met with semi-governmental entities such as the Infrastructure Development Company (IDCOL) and the SME Foundation, discussing how to best incentivize ICS manufactures, retailers and distributors to join this market. A criteria matrix developed by CCEB will hone in on the financial institution that is most relevant to this space, as well as identify entrepreneurs in the rural sector. CCEB organized four workshops with potential ICS manufacturers, consumers, distributors, Social Marketing Corporation (SMC) staff and NGOs focused on business enablement. During the field visit to Rajshahi, CCEB met 3 MFIs to get a sense of their current priority areas and introduce them to the idea of new ICS technology. The Market Facilitation Platform for ICS, launched by CCEB, has brought together national and international entrepreneurs to collaborate on implementing new ICS technologies in Bangladesh. Five international manufacturers and more than 80 local manufacturers participated in the platform. A business development workshop on ICS

campaigns by relevant stakeholders. Sources of financing may include carbon credits; commercial banks; and, other local financial institutions.

technologies organized by CCEB on July 9, 2013 gathered 17 local entrepreneurs to create a platform linking local entrepreneurs to four international manufacturers (Envirofit, Eco Chula, Prakti & Grameen Green Way). CCEB issued a Letter of Collaboration (LOC) with S.S Enterprise, a local entrepreneur for Greenway Smart Stove. Greenway is an international stove manufacturing company based in India, which recently introduced one of their cookstove products—a single burner, high-efficiency cookstove designed for long-term, everyday use.<sup>1</sup>

#### **5.3 Capacity Building for Financial Institutions**

CCEB endeavored to support capacity building of financial institutions lending to enterprises. This support focuses on financial and technical evaluation of loan proposals and monitoring, reporting, and verification of cookstove installations and borrower performance. CCEB agreed to perform a current state analysis and then identify specific commercial banks and/or MFIs interested in providing financing for ICS. CCEB intends to weigh the options of collaborating with IDCOL to institute a national cookstoves support program with rationalized and consistent subsidies, similar to IDCOL's Solar Home System initiative. CCEB would define key performance metrics to track IDCOL's participation and achieve future collaboration that is transparent and accountable. In parallel to this, CCEB would advocate with higher-level officials at other financial institutions to set up a self-sustainable loan program.

CCEB has met with a number of stakeholders in order to understand access to finance and different financial products available to micro enterprises. Throughout the year, CCEB continued to engage with a number of MFIs to identify potential working areas. CCEB also visited three MFIs during the trip to Rajshahi. Each institution provided a brief overview on their current portfolio of projects and operation structure. CCEB was able to strike initial agreements with all three parties, whom expressed interest in adding ICS to their product list and drafting a LOC. CCEB issued a report of findings and recommendations in the Year 1 Task 5 Summary Report, which includes recommendations for collaboration with IDCOL.

#### **5.4 Standards and Protocols**

CCEB planned to work with a specialized institution to establish standards and protocols for cookstove design, installation, testing, and performance monitoring. CCEB would work with MOPEMR and GACC to establish a center of excellence to house all relevant cookstove knowledge and innovation practices. CCEB intends to also research world-class standards and protocols and link this initiative to other programs that are currently underway in similar regions of the world.

CCEB initiated this task by participating in the ICS standards and training program arranged by GACC, which explored the requirements necessary to bring a testing and standards center to Bangladesh. CCEB developed a criteria matrix to enable the selection of an institution that could house the testing center. CCEB met with U.S. based firm Berkeley Air to discuss how their expertise in ICS standards and testing could help with CCEB's initiatives. Meetings that CCEB held with other ICS Bangladeshi stakeholders (IDCOL,

<sup>1</sup> The stove can use any type of solid biomass fuel including, but not limited to, wood, cow dung and agricultural waste. The patent-pending design produces 70% less smoke and uses 65% less fuel than traditional mud cookstoves.

WBG, and GACC) broached how to create a Testing and Standard Center, at both the national and the grassroots level. GACC, GIZ, SNV and Power Division organized a Workshop on Lab and Testing Centre at the Power Division, which CCEB attended. CCEB organized the roundtable discussion "Testing and Standards of ICS" on September 17 2013, again to introduce new ICS technologies and become familiarized with current testing and standard facilities in Bangladesh. There were thirteen participants, including the USAID Representative. CCEB was able to identify the present testing situation and understand how and where to set up a testing center and center of excellence. The Year 1 Task 5 Report will include findings recommendations on these topics.

#### 5.5 Coordination

CCEB plans to promote close cooperation with all relevant parties across the ICS sector, to provide technical guidance on key issues and update others on the progress in implementing USAID program activities. The contractor agreed to ensure that program activities are closely coordinated with other programs supporting GACC, and will assist in initializing the Knowledge Sharing Platform in collaboration with MOPEMR. CCEB intends to organize a biannual conference, as part of the Knowledge Sharing Platform, which brings all regional players together. CCEB attended the GACC global conference to derive best practices and share them with local entities. In addition to these efforts, CCEB aims to link manufacturers and distributors through two workshops and meetings for knowledge sharing purposes in collaboration with other ICS actors.

CCEB and MOPEMR have come together to identify ways of creating a formal collaboration platform for all stakeholders involved in creating and promoting ICS in Bangladesh. CCEB will also help implement the vision and goals of GACC. CCEB recently led a stakeholder meeting, which MOPEMR, IDCOL, WBG, FHI360, included Winrock, GIZ and USAID in Cambodia to understand the status of the Country Action Plan (CAP). The CAP will provide a formal collaboration platform for these and other related stakeholders. During this coordination activity, GACC demonstrated interest in joining USAID to create this ICS sector platform. The Deloitte team's Maturity Model tool, coupled with GACC's Bangladesh Country Action Plan specific tool, will help moderate and provide accountability to involved stakeholders.

CCEB, during the GACC Forum in Cambodia, presented the ongoing work in Bangladesh to global players in ICS.

The Market Facilitation Platform for ICS facilitated by CCEB is one of the largest ICS coordination platforms in Bangladesh. The event organized by the platform gathered 200 participants, including national and international manufacturers, local NGOs, donor organizations, local entrepreneurs, the Power Division, the Department of the Environment, the Ministry of Health, and the Ministry of Women and Children Affairs. CCEB has provided consistent support to GACC and the Power Division to finalize the CAP issued in

November 2013. CCEB is also currently drafting
an LOC with GACC.

#### 6.0 Other

CCEB implemented the following ancillary activities during the year:

#### 6.1 Environmental Monitoring and Mitigation Plan (EMMP)

As part of its initial Work Plan and all Annual Work Plans thereafter, the Deloitte team reviewed – and will continue to review – all ongoing and planned activities under this contract to determine if they are within the scope of the approved Regulation 216 environmental documentation. The Deloitte team will collaborate with the USAID Agreement Officer's Representative (AOR) and Mission Environmental Officer (MEO) or Bureau Environmental Officer (BEO), as appropriate.

#### **ACCOMPLISHMENTS THIS YEAR:**

CCEB completed the EMMP and forwarded it to USAID for its review. Subsequently, USAID determined that an EMMP would not be required for CCEB, per the findings of the USAID IEE Amendment dated August 2, 2013.

#### 6.2 Gender

CCEB will require that the Contractor continue the practice of gender sensitive programming in clean energy development. Thus, the Contractor should design specific interventions to address the barriers women may face with respect to energy technologies and services. Under the regulatory task, the CCEB implementer will consider gender in the design and implementation of public outreach and consumer groups' capacity building efforts, e.g. tailoring outreach events towards stakeholders in a gender-specific way, and providing technical support for female-based civil society organizations. The EE components of this program will target many industries that not only employ a high ratio of female workers, but also those that are women-owned. The market development of ICS will consider the needs of female cookstove users and will support the scale-up of stove models that meet the identified needs and have benefits for women users. Women participation in the cookstove market value chain is thus a critical element of this activity.

#### **ACCOMPLISHMENTS THIS YEAR:**

CCEB identified gender-related mainstreaming activities for each task, and will incorporate these into the Year 2 Work Plan.

#### **6.3 CCEB Website**

CCEB created and maintained a project website; CCEB updates the website regularly with announcements, updates, and technical reports.

#### 6.4 Performance Monitoring and Evaluation Plan (PMEP)

CCEB developed a PMEP for project activities, implemented a spreadsheet- based tracking and monitoring system, and hired a PMEP specialist. The PMEP was approved by USAID and subsequently updated for Year 2.

#### 6.5 YEAR 2 Work Plan

The Year 1 Work Plan was developed and approved by USAID; subsequently a draft Year 2 Work Plan was developed and submitted to USAID for review; planning sessions were completed in November and the final Year 2 Work Plan is under development.

#### Performance Indicator Results against Targets

The CCEB project actively tracks performance indicator results against targets and a summary is presented as follows (note: most of the first year indicators are zeroed out to allow time for various initiatives to show results):

Indicator 1: Quantity of greenhouse gas emissions, measured in metric tons of CO2e, reduced or sequestered as a result of USG assistance

		P	ERFORM <i>A</i>	NCE INDIC	CATOR VAL	LUES				
Baseline	Baseline				Duamer	V				
Year	Value		Program Year							
2012 0	FY 13	FY 13	FY 14	FY 15	FY 16	FY 17	Total	Total		
	U	Actual	Target	Target	Target	Target	Target	Actual	Target	
Target		0	0	45,267	104,259	138,759	160,344	0	448,629	
			Dis	aggregated	Targets					
Textiles E	E Projects	0	0	4,147	15,307	34,566	46,603	-	100,623	
Steel Re-rolling EE Projects		0	0	-	11,548	26,516	36,064	-	74,128	
Jute EE Projects		0	0	-	249	465	465	-	1,179	
Frozen Foods EE Projects		0	0	-	55	112	112	-	279	
Cookstoves Installed 0			0	41,120	77,100	77,100	77,100	-	272,420	

THIS SHEET LAST UPDATED ON: 12/05/2013

		P	ERFORMA	NCE INDIC	CATOR VAI	LUES				
Baseline Year	Baseline Value		Program Year							
2012	0	FY 13 Actual	FY 13 Target	FY 14 Target	FY 15 Target	FY 16 Target	FY 17 Target	Total Actual	Total Target	
Target 2		2	0	13	5	24	0	2	42	
			Disa	aggregated	Targets					
Gover	nmental	2	0	1	2	1	0	2	4	
Privat	e sector	0	0	3	0	20	0	-	23	
Utility		0	0	2	1	1	0	-	4	
0	ther	0	0	7	2	2	0	-	1	
Actual Recorded in CCEB Data Tracking System										

THIS SHEET LAST UPDATED ON: 12/05/2013

		P	ERFORMA	NCE INDIC	CATOR VAI	LUES					
Baseline Year	Baseline Value		Program Year								
2012	0	FY 13 Actual	FY 13 Target	FY 14 Target	FY 15 Target	FY 16 Target	FY 17 Target	Total Actual	Total Target		
Ta	rget	57	56	425	1,076	1,040	1,020	57	3,617		
			Disa	ggregated	Targets						
Govern	nmental	6	36	25	16	0	0	6	7		
Private	e sector	37	20	60	40	20	20	37	16		
Uti	ility	6	0	20	20	20	0	6	6		
Acad	demic	6	0	0	600	600	600	6	1,80		
Entreprer	neur/Other	2	0	320	400	400	400	2	1,52		
Fer	nale	4	20	149	377	364	357	4	1,26		
M	ale	53	36	276	699	676	663	53	2,35		
Ac	tual		Recorded in CCEB Data Tracking System								

	umber of laws, p	•	• .	. •			ressing clea	n energy re	elated
measures offi	cially proposed,		implement ERFORMA						
Baseline	Baseline	•		NOL INDI					
Year	Value				Progra	m Year			
2012	0	FY 13 Actual	FY 13 Target	FY 14 Target	FY 15 Target	FY 16 Target	FY 17 Target	Total Actual	Total Target
Та	rget	0	0	2	3	3	2	0	10
				ggregated					
	ations, Policies	0	0	2	1	1	1	0	
	s, Strategies, licies	0	0	0	2	2	1	0	
Ac	tual			F	Recorded in C	CCEB Data Tr	acking Syster	n	
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Indicator 5: R	ating increase in	organizatio	onal capacit	y based on	maturity m	odel scorec	ard		
		P	ERFORMA	NCE INDIC	CATOR VA	LUES			
Baseline	Baseline				Progra	m Year			
Year 2012	Value TBD	FY 13	FY 13	FY 14	FY 15	FY 16	FY 17	Total	Total
		Actual	Target	Target	Target	Target	Target	Actual	Target
	rget	N/A	N/A	20%	30%	45%	55%	N/A	55%
Ac	tual	=:::0					acking Syster	n	
		THIS	SHEET LA	ST UPDA	TED ON: 1	2/05/2013			
Indicator 6: A	mount of energy	saved due	to energy e	fficiency as	a result of	USG assista	nce		
		P	ERFORMA	NCE INDIC	CATOR VA	LUES			
Baseline Year	Baseline Value				Progra	m Year			
2012	0	FY 13	FY 13	FY 14	FY 15	FY 16	FY 17	Total	Total
-		Actual	Target	Target	Target	Target	Target	Actual	Target
Та	rget	0	0	72,791	482,589	1,095,781	1,479,859	0	3,131,020
Tavtilaa	EE Brainata	•		ggregated		C4 E 0 E 4	000 000		4 700 40
	EE Projects ing EE Projects	0	0	72,791	272,364 205,485	615,051 471,811	829,230 641,709	-	1,789,437 1,319,005
	Projects	0	0	-	4,423	8,269	8,269	-	20,962
Frozen Foo	ds EE Projects	0	0	-	317	650	650	-	1,617
Ac	tual			F	Recorded in C	CCEB Data Tr	acking Syster	n	
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Indicator 7: N	umber of clean e								
		P	ERFORMA	NCE INDIC	CATOR VA	LUES			
Baseline Year	Baseline Value				Progra	m Year			
2012	0	FY 13	FY 13	FY 14	FY 15	FY 16	FY 17	Total	Total
То	rant	Actual	Target 1	Target 12	<b>Target</b> 79	Target	Target	Actual	Target
Id	rget	1		ıggregated		121	67	1	280
Energy Sec	ctor Planning	0	2100	1	· 33 to			0	
EE Industi	rial Projects	0	0	4	72	114	67	0	257
	M Programs	0	0	2	2	2	0	0	(
Cookstove	s Sector Dev	11	1	5	5	5	0	1	16
Ac	tual			F	Recorded in C	CCEB Data Tr	acking Syster	n	
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ndicator 8: Amount of investment leveraged in U.S. dollars, from private and public sources, for climate change as a	

result of USG	assistance								
		P	ERFORMA	NCE INDIC	CATOR VA	LUES			
Baseline Baseline Program Year									
Year	Value				Fiogra	III Ieai			
2042		FY 13	FY 13	FY 14	FY 15	FY 16	FY 17	Total	Total
2012	0	Actual	Target	Target	Target	Target	Target	Actual	Target
Targ	et (\$M)	\$0.00	\$0.00	\$2.90	\$13.03	\$11.87	\$10.50	\$0.00	\$38.30
			Disa	ggregated	Targets				
Public Sect	or Funds (\$M)	0	\$0.00	\$0.50	\$1.00	\$0.50	\$0.00	\$0.00	\$2.00
Private Sector Funds (\$M) 0		\$0.00	\$2.40	\$12.03	\$11.37	\$10.50	\$0.00	\$36.30	
Ac	tual			F	Recorded in C	CEB Data Tra	acking Syster	n	
		THIC	CHEETIA	CT LIDDA	CED ON: 4	2/0E/2012			

		P	ERFORM <i>A</i>	NCE INDI	CATOR VA	LUES				
Baseline	Baseline	Program Year								
Year	Value									
2012	2012 0	FY 13	FY 13	FY 14	FY 15	FY 16	FY 17	Total	Total	
2012		Actual	Target	Target	Target	Target	Target	Actual	Target	
Target 0			0	40,000	75,000	75,000	75,000	0	265,000	
			Disaggre	gated Targ	ets by Regio	on				
T	BD								(	
Т	BD								(	
T	BD								(	
TBD								(		
Ac	tual			I	Recorded in C	CCEB Data Ti	acking Syste	m		
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